

direction. In some cases, pre-strain may be added in one direction such that a negative pre-strain occurs in another direction, e.g. 600 percent in one direction coupled with -100 percent in an orthogonal direction. In these cases, the net change in area due to the pre-strain is typically positive.--

In the Claims:

Please AMEND the claims as follows.

1. (Twice Amended) A transducer for converting between electrical energy and mechanical energy, the transducer comprising an electroactive polymer having a plurality of active areas, the plurality of active areas comprising:

a first active area having at least two first active area electrodes and a first portion of the electroactive polymer arranged in a manner which causes the first portion to deflect in response to a change in electric field provided by the at least two first active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the first portion; and

a second active area having at least two second active area electrodes and a second portion of the electroactive polymer arranged in a manner which causes the second portion to deflect in response to a change in electric field provided by the at least two second active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the second portion,

wherein the electroactive polymer is elastically pre-strained by a factor in the range of about 1.5 times to 50 times the original area.

10. (Twice Amended) A device for converting between electrical energy and mechanical energy, the device comprising:

an electroactive polymer having a plurality of active areas, the plurality of active areas comprising:

a first active area having at least two first active area electrodes and a first portion of the electroactive polymer arranged in a manner which causes the first portion to deflect

in response to a change in electric field provided by the at least two first active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the first portion,

a second active area having at least two second active area electrodes and a second portion of the electroactive polymer arranged in a manner which causes the second portion to deflect in response to a change in electric field provided by the at least two second active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the second portion; and

a substantially rigid member coupled to a third portion of the electroactive polymer,

wherein the electroactive polymer is elastically pre-strained by a factor in the range of about 1.5 times to 50 times the original area.

15. (Twice Amended) A method for using an electroactive polymer comprising a first active area and a second active area, the first active area having at least two first active area electrodes and a first portion of the electroactive polymer, the second active area having at least two second active area electrodes and a second portion of the electroactive polymer, the method comprising:

prestraining the electroactive polymer by a factor in the range of about 1.5 times to 50 times the original area;

providing a change in electric field to the at least two first active area electrodes;
and

providing a change in electric field to the at least two second active area electrodes.

33. (Twice Amended) A device for converting between electrical energy and mechanical energy, the device comprising:

an electroactive polymer prestrained by a factor in the range of about 1.5 times to 50 times the original area and having a plurality of active areas, the plurality of active areas comprising:

a first active area having at least two first active area electrodes and a first portion of the electroactive polymer arranged in a manner which causes the first portion to deflect in response to a change in electric field provided by the at least two first active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the first portion,

a second active area having at least two second active area electrodes and a second portion of the electroactive polymer arranged in a manner which causes the second portion to deflect in response to a change in electric field provided by the at least two second active area electrodes and/or arranged in a manner which causes a change in electric field in response to deflection of the second portion;

a substantially rigid member having a first segment and a second segment, the first segment coupled to a third portion of the electroactive polymer, the second segment capable of motion assisted by deflection of the first portion of the polymer and/or capable of motion that causes a change in electric field in the first portion of the polymer; and

a frame coupled to a fourth portion of the polymer.

REMARKS

Claims 1-31 and 33-37 are pending in the application. Claims 1-31 and 33-37 are rejected. Claims 1, 10, 15, and 33 have been amended. Applicants respectfully request reconsideration of the rejections set forth in the Office Action dated August 13, 2002 in view of the following remarks.

Applicants thank the Examiner for the courtesy extended during the personal interviews with Applicants' representative on September 16 and 18, 2002. During these interviews, several electroactive polymer samples were shown, electroactive polymer progress was discussed and demonstrated via numerous videos, and the rejections under 35 U.S.C. §102 and §103 were discussed.